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## (54) MEDIUM TRANSACTION SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To quickly decide effectiveness and to reduce a transaction time by preliminarily extracting medium effectiveness information and terminal effectiveness information to a center computer side.

SOLUTION: When an IC card 1 is inserted into a terminal device 3, the IDs of the card 1 and the device 3 are sent to a center computer 4. The computer 4 preliminarily stores effectiveness information retrieved from a center database 6 in an effectiveness information storing part 8. The effectiveness of the IC card and the terminal device is judged by the computer 4 and when both of them are effective, transaction is started.
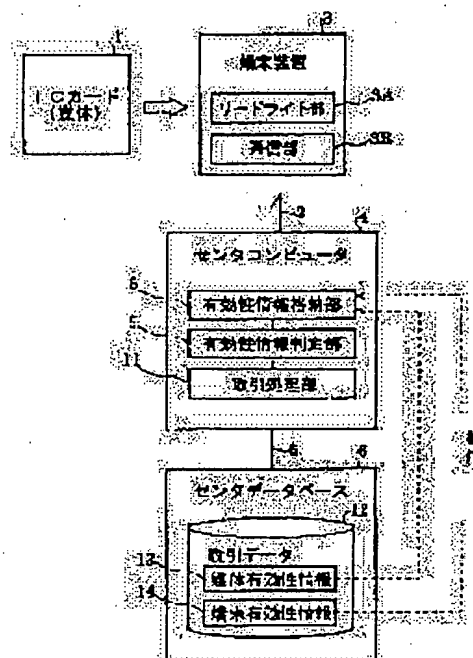


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## CLAIMS

[Claim]
[Claim 1] The terminal unit which reads the information recorded by the medium, and the center computer which receives the information which this terminal unit read and performs transaction processing, The transaction data which are equipped with the center database which stored the transaction data referred to in case this center computer performs transaction processing, and were stored in the aforementioned center database The medium effectiveness information for judging the effectiveness of the aforementioned medium and the terminal effectiveness information for judging the effectiveness of the aforementioned terminal unit are included. to the aforementioned center computer Before there is a transaction demand from a terminal unit, a center database is accessed beforehand. The effectiveness information store section which extracts and stores the medium effectiveness information and the terminal effectiveness information is prepared. the aforementioned center computer The medium trading system characterized by receiving the identification data of a medium and a terminal unit from a terminal unit if there is a transaction demand from a terminal unit, and performing demanded transaction processing if it judges that both the concerned mediums and terminal units are effective with reference to the aforementioned effectiveness information store section.
[Claim 2] The terminal unit which reads the information recorded by the medium, and the center computer which receives the information which this terminal unit read and performs transaction processing, The transaction data which are equipped with the center database which stored the transaction data referred to in case this center computer performs transaction processing, and were stored in the aforementioned center database The medium effectiveness information for judging the effectiveness of the aforementioned medium and the terminal effectiveness information for judging the effectiveness of the aforementioned terminal unit are included. to the aforementioned center computer Before there is a transaction demand from a terminal unit, a center database is accessed beforehand and the effectiveness information store section which extracts and stores the medium effectiveness information is prepared. the aforementioned center computer When there was a transaction demand from a terminal unit, and the identification data of a medium and a terminal unit are received from a terminal unit, the effectiveness of the concerned medium is judged with reference to the aforementioned effectiveness information store section and it judges that a medium is effective, while an acknowledgment is sent to a terminal unit The medium trading system characterized by performing demanded transaction processing if a center database is accessed and it judges that a terminal unit is effective with reference to the effectiveness information on the concerned terminal unit.
[Claim 3] The terminal unit which reads the information recorded by the medium, and the center computer which receives the information which this terminal unit read and performs transaction processing, The transaction data which are equipped with the center database which stored the transaction data referred to in case this center computer performs transaction processing, and were stored in the aforementioned center database The medium effectiveness information for judging the effectiveness of the aforementioned medium and the terminal effectiveness information for judging the effectiveness of the aforementioned terminal unit are included. to the aforementioned center computer Before there is a transaction demand from a terminal unit, a center database is accessed beforehand and the effectiveness information store section which extracts and stores the terminal effectiveness information is prepared. the aforementioned center computer If there is a transaction demand from a terminal unit, the identification data of a medium and a terminal unit will be received from a terminal unit. When the effectiveness of the concerned terminal unit is judged with reference to the aforementioned effectiveness information store section and it judges that a terminal unit is effective The medium trading system characterized by performing demanded transaction processing if a center database is accessed and it judges that a medium is effective with reference to the effectiveness information on a medium while an acknowledgment is sent to a terminal unit.

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## DETAILED DESCRIPTION

[Detailed description]
[0001]
[The technical field to which invention belongs] this invention equips the terminal unit connected to the
computer of a financial institution with the IC card of the user who builds in cybermoney, and relates to the
medium trading system suitable for close payment processing in which exchange of actual currency and
cybermoney is performed.
[0002]
[Prior art] Cybermoney is made to build in an IC card and the IC card type cybermoney system used for
shopping and an internet transaction at a store is developed. In this system, a user precedes shopping and a
transaction and accesses the computer which is in the cybermoney management center of a financial
institution using a terminal unit. In the cybermoney management center, actual currency is used as cybermoney
from a user's account, it moves to an IC card or cybermoney is returned to a user's account from an IC card.
That is, a cybermoney management center performs change of actual currency between a user's accounts and
cybermoney management accounts in a financial institution. An IC card carries out the role of a wallet and
cybermoney is used for shopping etc.
[0003] use in the field of petty sanction expects such an IC card type cybermoney system [ especially ] —
having — **** — for example, "— technical trend:component-engineering (pp.772-777) Information Processing
Society of Japan of EC at large — the content is introduced to Vol.38 and No.9"
[0004]
[Object of the Invention] By the way, there were the following technical probrems which should be solved in the
above Prior arts. In an IC card type cybermoney system, the computer in a terminal unit and a cybermoney
management center is connected through networks, such as the telephone line, and internet or CATV. A
terminal unit is arranged like ATM (automatic cash close payment equipment) in a financial institution, or is
arranged at being arranged at the store which deals with goods ****, or ********. In case the change of the
currency by the cybermoney management center is started, authentication processing of being a terminal unit
with the connected effective terminal unit and authentication processing of being an IC card with an effective
IC card are performed, and a transfer of a change demand information and a transfer of cybermoney are
performed after that. When the time which this processing takes was long, not only making a user wait for a
long time but there was a problem that traffic will also increase.
[0005]
[The means for solving a technical problem] this invention adopts the following configuration, in order to solve
the above point.
The terminal unit which reads the information recorded by the <configuration 1> medium, and the center
computer which receives the information which this terminal unit read and performs transaction processing.
The transaction data which are equipped with the center database which stored the transaction data referred
to in case this center computer performs transaction processing, and were stored in the above-mentioned
center database The medium effectiveness information for judging the effectiveness of the above-mentioned
medium and the terminal effectiveness information for judging the effectiveness of the above-mentioned
terminal unit are included. to the above-mentioned center computer Before there is a transaction demand from
a terminal unit, a center database is accessed beforehand. The effectiveness information store section which
extracts and stores the medium effectiveness information and the terminal effectiveness information is
prepared. the above-mentioned center computer The medium trading system characterized by receiving the
identification data of a medium and a terminal unit from a terminal unit if there is a transaction demand from a
terminal unit, and performing demanded transaction processing if it judges that both the concerned mediums
and terminal units are effective with reference to the above-mentioned effectiveness information store section.

[0006] The terminal unit which reads the information recorded by the <configuration 2> medium, and the center
computer which receives the information which this terminal unit read and performs transaction processing.
The transaction data which are equipped with the center database which stored the transaction data referred
to in case this center computer performs transaction processing, and were stored in the above-mentioned
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a terminal unit, a center database is accessed beforehand and the effectiveness information store section which extracts and stores the medium effectiveness information is prepared. the above-mentioned center computer When there was a transaction demand from a terminal unit, and the identification data of a medium and a terminal unit are received from a terminal unit, the effectiveness of the concerned medium is judged with reference to the above-mentioned effectiveness information store section and it judges that a medium is effective, while an acknowledgment is sent to a terminal unit The medium trading system characterized by performing demanded transaction processing if a center database is accessed and it judges that a terminal unit is effective with reference to the effectiveness information on the concerned terminal unit.

[0007] The terminal unit which reads the information recorded by the <configuration 3> medium, and the center computer which receives the information which this terminal unit read and performs transaction processing, The transaction data which are equipped with the center database which stored the transaction data referred to in case this center computer performs transaction processing, and were stored in the above-mentioned center database The medium effectiveness information for judging the effectiveness of the above-mentioned medium and the terminal effectiveness information for judging the effectiveness of the above-mentioned terminal unit are included. to the above-mentioned center computer Before there is a transaction demand from a terminal unit, a center database is accessed beforehand and the effectiveness information store section which extracts and stores the terminal effectiveness information is prepared. the above-mentioned center computer If there is a transaction demand from a terminal unit, the identification data of a medium and a terminal unit will be received from a terminal unit. When the effectiveness of the concerned terminal unit is judged with reference to the above-mentioned effectiveness information store section and it judges that a terminal unit is effective The medium trading system characterized by performing demanded transaction processing if a center database is accessed and it judges that a medium is effective with reference to the effectiveness information on a medium while an acknowledgment is sent to a terminal unit.

[0008]

[Gestalt of implementation of invention] Hereafter, the gestalt of enforcement of this invention is explained using an example.

<Example 1> In this invention, in case the change of the currency by the cybermoney management center is started, authentication processing of being a terminal unit with the connected effective terminal unit and authentication processing of being an IC card with an effective IC card are accelerated, and communication time is shortened. In addition, although this invention can be widely used for what uses a medium for various margin transactions in addition to a transaction of the cybermoney by the IC card, the following examples are explained by the case of an IC card.

[0009] Drawing 1 shows the system-block view of an example 1. The terminal unit 3 equipped with IC card 1, the center computer 4 connected to this terminal unit 3 through the communication line 2, and the center database 6 connected with the center computer 4 through LAN (Local Area Network)5 etc. were shown in this drawing.

[0010] IC card 1 is constituted by the money card which carried the integrated circuit which has the function to memorize the transaction information on cybermoney or others and to memorize the identification data (ID) for discriminating the IC card 1, for example, contains memory and a processing unit. The terminal unit 3 is connected with the computer in a cybermoney management center through networks, such as the telephone line, and internet or CATV.

[0011] This terminal unit 3 is equipment used for a transaction which equips with IC card 1 and performs change of actual currency between a user's account and a cybermoney management account. A terminal unit 3 is equipped with read/write section 3A and communications department 3B. With the reading function of the information recorded by IC card 1, this terminal unit 3 transmits the read content through a network, has the function which writes the data received from the network in IC card 1, for example, is constituted by these by the personal computer and the communication terminal only for IC card 1 processings.

[0012] The effectiveness information store section 8, the effectiveness information judging section 9, and the transaction processing section 11 are formed in the center computer 4. The effectiveness information store section 8 is constituted by the storage which stores the information for judging the effectiveness of IC card 1 or the terminal unit 3 so that it may explain later. The effectiveness information judging section 9 is a fraction which has the function to judge the effectiveness of IC card 1 or the terminal unit 3, with reference to the effectiveness information store section 8, as explained later. The transaction processing section 11 is a fraction with the function to perform transaction processing which a terminal unit 3 demands, after the above-mentioned effectiveness information judging section 9 performs an effectiveness judging of IC card 1 or the terminal unit 3. In addition, the effectiveness information judging section 9 and the transaction processing section 11 are all constituted by the program module installed in the center computer 4.

[0013] The center database 6 is constituted by the storage which memorized all the transaction data 12 required because of a change transaction of currency etc. LAN5 etc. connects mutually and the center computer 4 and the center database 6 enable the access of various kinds of transaction data 12. In the transaction data 12 of this center database 6, the medium effectiveness information 13 and the terminal effectiveness information 14 for judging the effectiveness of IC card 1 or the terminal unit 3 are included. These informations are used for authentication processing by the center computer 4.

[0014] In authentication processing of being IC card 1 with effective IC card 1, the theft of the card is carried out, for example, or when it is the thing of expiration, judgment that a card is invalid is carried out. Such an

information is recorded by all users' transaction data file for every card. This transaction data file is saved in the center database 6. The thing of the information for judging the effectiveness of IC card 1 in this transaction data file is called medium effectiveness information 13.

[0015] In authentication processing of being a terminal unit 3 with an effective terminal unit 3, when it is not the thing of the store registered beforehand or the registered user, judgment that a terminal unit 3 is invalid is carried out. Such an information is recorded by the registration terminal unit list etc. This registration terminal unit list is saved in the center database 6. A terminal unit 3 is registered for clarifying a user and preventing an unauthorized use. The thing of the information for judging the effectiveness of the terminal unit 3 under this registration terminal unit list is called terminal effectiveness information 14.

[0016] Next, an operation of the above-mentioned system is explained. The operation flow chart of the system of an example 1 is shown in drawing 2 . First, the above-mentioned terminal unit 3 is equipped with IC card 1 in step S1. Next, in step S2, the center computer 4 receives medium ID and terminal unit ID from a terminal unit 3. Next, in step S3, with reference to the effectiveness information store section 8, the center computer 4 takes out a medium effectiveness information and a terminal effectiveness information, and performs collating of medium ID and terminal unit ID.

[0017] In step S4, it judges whether a medium is effective and judges whether a terminal unit is effective in step S5. If it is judged that all are effective, it will progress to step S6. And an acknowledgment is transmitted to a terminal unit 3. And in step S7, the content of a transaction is received from a terminal unit 3. Then, a transaction is started in step S8.

[0018] On the other hand, if either a medium or a terminal unit is judged to be invalid in step S4 and step S5, it will progress to step S9 and a negative acknowledge will be transmitted to a terminal unit 3. And the connection between a terminal and a center computer is ended.

[0019] A user equips a terminal unit 3 with his IC card 1, for example, dials the telephone number, and connects a terminal unit 3 to the center computer 4. And the identification data (ID) of IC card 1 and the identification data (ID) of a terminal unit 3 are first sent from a terminal unit 3 to the center computer 4.

[0020] Conventionally, at this time, the center computer 4 accessed the center database 6, and the effectiveness of IC card 1 and the effectiveness of a terminal unit 3 were judged with reference to the medium effectiveness information 13 and the terminal effectiveness information 14. On the other hand, in this invention, at the time of system activation, the center computer 4 accesses the center database 6 beforehand, extracts the medium effectiveness information 13 and the terminal effectiveness information 14, and stores and prepares the effectiveness information store section 8 prepared in the center computer 4 side.

[0021] Therefore, if the identification data of IC card 1 and the identification data of a terminal unit 3 are transmitted from a terminal unit 3 to the center computer 4, the effectiveness information judging section 9 of the center computer 4 will judge the effectiveness of IC card 1, and the effectiveness of a terminal unit 3 with reference to the effectiveness information store section 8. Since the center database 6 is not accessed at this time, judgment processing of effectiveness can be performed quickly.

[0022] If it judges that both IC card 1 and the terminal unit 3 are effective as a result of this judgment, an acknowledgment will be transmitted from the center computer 4 to a terminal unit 3. Moreover, if judged with IC card 1, any of a terminal unit 3, or one side being invalid, a negative acknowledge will be transmitted from the center computer 4 to a terminal unit 3. The terminal unit 3 which received the acknowledgment transmits a predetermined transaction demand to the center computer 4 continuously. The transaction processing section 11 of the center computer 4 starts processing of the change of currency etc. according to a demand of a terminal unit 3.

[0023] In addition, it is for shortening time judging the effectiveness of IC card 1 and the terminal unit 3 in the center computer 4 that the center computer 4 stores beforehand the medium effectiveness information 13 and the terminal effectiveness information 14 in the effectiveness information store section 8, after equipping a terminal unit 3 with IC card 1. Therefore, if the timing which stores the medium effectiveness information 13 and the terminal effectiveness information 14 in the effectiveness information store section 8, or is updated is before there is a transaction demand from a terminal unit 3, it is always good. For example, in order to start business every day, the time of starting a system is sufficient, and it may be made to update the content every fixed time after system activation. You may be made to update by the demand from the center database 6 side at any time.

[0024] <the effect of an example 1> — since the effectiveness of a medium or a terminal is judged as mentioned above using the medium effectiveness information and the terminal effectiveness information that the center computer is beforehand extracted from the center database when there is a transaction demand from a terminal unit 3, while a center computer accesses a center database, compared with the case where effectiveness is judged, the processing time is fully shortened Processing of a transaction etc. is accelerable with this.

[0025] Before there was a transaction demand from a terminal unit 3, the medium effectiveness information 13 and the terminal effectiveness information 14 are extracted to the center computer 4 side, and it was made to make them memorize by the <example 2> example 1 for improvement in the speed of transaction processing. The effectiveness information on IC card 1 is constituted by the data constellation which listed the identification data of IC card 1 which became invalid. Moreover, the effectiveness information on a terminal unit 3 is constituted by the data constellation which listed the identification data of an effective terminal. Therefore, an increase of the number of IC cards 1 and the terminal units 3 used as a management object increases the

amount of data of the medium effectiveness information 13 or the terminal effectiveness information 14 gradually.

[0026] for this reason, the medium effectiveness information 13 and the terminal effectiveness information 14 -- when all tend to be extracted from the center database 6 and it is going to save to the center computer 4, there is also a possibility that the amount of resources for a data storage may become huge Then, by this example, the amount of resources for a data storage was stopped, having extracted only any of the medium effectiveness information 13 and the terminal effectiveness information 14, or one side to the center computer 4 side, having been made to make it memorize, and maintaining the advantage of improvement in the speed of processing. The example 2 memorizes the medium effectiveness information 13 among the effectiveness information store section 8 of the center computer 4. The example is explained below.

[0027] Explanatory drawing which compared the effectiveness information store section of each example is shown in drawing 3 . By the case of an example 1, as for drawing 3 (a), medium effectiveness information 13A and terminal effectiveness information 14A are stored in the effectiveness information store section 8. On the other hand, (b) is the example of an example 2 and only medium effectiveness information 13A is stored in the effectiveness information store section 8. Moreover, (c) is the example of the example 3 explained later, and terminal effectiveness information 14A is stored in the effectiveness information store section 8. As amount of data, it can be said that there is more medium effectiveness information 13A than terminal effectiveness information 14A.

[0028] On the other hand, a terminal is judged that a medium is comparatively invalid in many cases to it being judged in almost all cases that it is effective. If any of medium effectiveness information 13A and terminal effectiveness information 14A or one side is stored in the effectiveness information store section 8, each advantage will arise from these points on the problem of storage capacity, and the problem of the rapidity of processing.

[0029] The sequence chart of an example 2 of operation is shown in drawing 4 . In addition, what showed the system of an example 2 itself to drawing 1 , and its configuration are the same. That it is different from an example 1 is the point of extracting and storing only the medium effectiveness information 13 in the effectiveness information store section 8 beforehand. Moreover, the place which an example 1 and the example 2 change does not have near processing after transaction start, either. In the sequence chart of drawing 4 , it illustrated so that time progress of the processing might understand processing different from an example 1 especially.

[0030] First, in step S1, if medium ID and terminal ID are transmitted to the center computer 4 from a terminal unit 3, by center computer 4, the effectiveness of medium ID will be judged with reference to the effectiveness information store section (step S2). And if the medium is effective and it is invalid in the acknowledgment, a negative acknowledge will be transmitted to a terminal unit 3 (step S3).

[0031] In addition, while this acknowledgment is sent out to a terminal unit 3, the center database 6 is accessed and the required information about terminal ID is acquired. That is, with reference to a terminal effectiveness information (step S4), a required response is obtained to the center database 6 (step S5). Here, the effective or invalid judgment to terminal ID is performed. On the other hand, a terminal unit 3 receives an acknowledgment in step S3, and transmits the required content of a transaction to the center computer 4 (step S6). If it judges that the center computer 4 has effective terminal ID at this time, it will progress to step S7 as it is, and transaction processing will be performed.

[0032] On the other hand, when judgment that a terminal is invalid is carried out, a negative acknowledge is transmitted to a terminal unit 3, and processing is stopped (step S7*). In this processing, time when the result said that terminal ID is effective is obtained, after transmitting medium ID and terminal ID to the center computer 4 from a terminal unit 3 until transaction processing is started hardly changes with an example 1. That is, if the effectiveness of terminal ID will be judged by the time it transmits an acknowledgment to a terminal unit 3 and a terminal unit 3 sends the content of a transaction to the center computer 4, the time of effectiveness decision of terminal ID will not delay start of transaction processing.

[0033] In addition, even if the time of this terminal ID effectiveness decision becomes long somewhat, the time to transaction processing start is fully substantially shortened compared with the former. Furthermore, since an acknowledgment is transmitted to a terminal unit 3 in the type where processing which judges the effectiveness information on terminal ID was omitted, the processing time may be shortened on the contrary rather than an example 1.

[0034] The amount of resources for a data storage can be stopped, maintaining the advantage of improvement in the speed of processing by memorizing beforehand the <effect of example 2> medium effectiveness information 13 among the effectiveness information store section 8 of the center computer 4. Moreover, since the case where the terminal unit 3 is invalid is very rare, the same high-speed processing as an example 1 is attained substantially.

[0035] The <example 3> example 3 memorizes the medium effectiveness information 13 among the effectiveness information store section 8 of the center computer 4. The example is explained below.

[0036] The sequence chart of an example 3 of operation is shown in drawing 5 . The configuration of this sequence chart is the same as that of what was shown in drawing 4 almost. In step S1 begun from a terminal unit 3, if medium ID and terminal ID are received, the center computer 4 will judge the effectiveness of terminal ID first with reference to the effectiveness information store section (step S2). And effectiveness decision of medium ID is omitted and acknowledge or a negative acknowledge is transmitted to a terminal unit 3 (step S3).

[0037] And refer to the medium effectiveness information on the center database 6 for the center computer 4 simultaneously (step S4). In addition, it assumes that there is comparatively much amount of data of a medium effectiveness information, and time until it obtains the response to a medium effectiveness information at step S5 is made longer than the time to step S6 which receives the content of a transaction from a terminal unit 3 here. For example, even if it is such a case, the center computer 4 waits for the response from the center database 6, and starts transaction processing (step S7). The effect as an example 2 that this example 3 is also almost the same is acquired.

[0038] In addition, since the effectiveness check of terminal ID can be performed rather than the effectiveness check of medium ID for a short time, in step S3, the timing which transmits acknowledge or a negative acknowledge to a terminal unit 3 has possibility higher than an example 2 of becoming quick. Since comparatively many invalid IC cards are generated, in the case of an invalid IC card, the negative acknowledge over a terminal unit 3 may become late. However, if processing to an effective IC card is accelerated, since the service to a just customer does not fall, it is satisfactory.

[0039] Furthermore, when judging it as an invalid IC card, the technique which is collected quickly, without returning, incorporated to a terminal unit can also be adopted. If the invalid IC card decreases the case with which a terminal is equipped again and also updates a medium invalid information by this each time, the practicality of this example will increase.

[0040] The amount of resources for a data storage can be stopped, maintaining the advantage of improvement in the speed of processing by memorizing beforehand the <effect of example 3> terminal effectiveness information 14 among the effectiveness information store section 8 of the center computer 4. Moreover, there are more mediums overwhelmingly than the number of terminal units. Therefore, the terminal effectiveness information 14 has little amount of data compared with the medium effectiveness information 13, and the storage capacity of the center computer 4 can be set up economically.

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PRIOR ART

[Prior art] Cybermoney is made to build in an IC card and the IC card type cybermoney system used for
shopping and an internet transaction at a store is developed. In this system, a user precedes shopping and a
transaction and accesses the computer which is in the cybermoney management center of a financial
institution using a terminal unit. In the cybermoney management center, actual currency is used as cybermoney
from a user's account, it moves to an IC card or cybermoney is returned to a user's account from an IC card.
That is, a cybermoney management center performs change of actual currency between a user's accounts and
cybermoney management accounts in a financial institution. An IC card carries out the role of a wallet and
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## EFFECT OF THE INVENTION

<the effect of an example 1> — since the effectiveness of a medium or a terminal is judged as mentioned above using the medium effectiveness information and the terminal effectiveness information that the center computer is beforehand extracted from the center database when there is a transaction demand from a terminal unit 3, while a center computer accesses a center database, compared with the case where effectiveness is judged, the processing time is fully shortened Processing of a transaction etc. is accelerable with this.

[0025] Before there was a transaction demand from a terminal unit 3, the medium effectiveness information 13 and the terminal effectiveness information 14 are extracted to the center computer 4 side, and it was made to make them memorize by the <example 2> example 1 for improvement in the speed of transaction processing. The effectiveness information on IC card 1 is constituted by the data constellation which listed the identification data of IC card 1 which became invalid. Moreover, the effectiveness information on a terminal unit 3 is constituted by the data constellation which listed the identification data of an effective terminal. Therefore, an increase of the number of IC cards 1 and the terminal units 3 used as a management object increases the amount of data of the medium effectiveness information 13 or the terminal effectiveness information 14 gradually.

[0026] for this reason, the medium effectiveness information 13 and the terminal effectiveness information 14 — — when all tend to be extracted from the center database 6 and it is going to save to the center computer 4, there is also a possibility that the amount of resources for a data storage may become huge Then, by this example, the amount of resources for a data storage was stopped, having extracted only any of the medium effectiveness information 13 and the terminal effectiveness information 14, or one side to the center computer 4 side, having been made to make it memorize, and maintaining the advantage of improvement in the speed of processing. The example 2 memorizes the medium effectiveness information 13 among the effectiveness information store section 8 of the center computer 4. The example is explained below.

[0027] Explanatory drawing which compared the effectiveness information store section of each example is shown in drawing 3 . By the case of an example 1, as for drawing 3 (a), medium effectiveness information 13A and terminal effectiveness information 14A are stored in the effectiveness information store section 8. On the other hand, (b) is the example of an example 2 and only medium effectiveness information 13A is stored in the effectiveness information store section 8. Moreover, (c) is the example of the example 3 explained later, and terminal effectiveness information 14A is stored in the effectiveness information store section 8. As amount of data, it can be said that there is more medium effectiveness information 13A than terminal effectiveness information 14A.

[0028] On the other hand, a terminal is judged that a medium is comparatively invalid in many cases to it being judged in almost all cases that it is effective. If any of medium effectiveness information 13A and terminal effectiveness information 14A or one side is stored in the effectiveness information store section 8, each advantage will arise from these points on the problem of storage capacity, and the problem of the rapidity of processing.

[0029] The sequence chart of an example 2 of operation is shown in drawing 4 . In addition, what showed the system of an example 2 itself to drawing 1 , and its configuration are the same. That it is different from an example 1 is the point of extracting and storing only the medium effectiveness information 13 in the effectiveness information store section 8 beforehand. Moreover, the place which an example 1 and the example 2 change does not have near processing after transaction start, either. In the sequence chart of drawing 4 , it illustrated so that time progress of the processing might understand processing different from an example 1 especially.

[0030] First, in step S1, if medium ID and terminal ID are transmitted to the center computer 4 from a terminal unit 3, by center computer 4, the effectiveness of medium ID will be judged with reference to the effectiveness information store section (step S2). And if the medium is effective and it is invalid in the acknowledgment, a negative acknowledge will be transmitted to a terminal unit 3 (step S3).

[0031] In addition, while this acknowledgment is sent out to a terminal unit 3, the center database 6 is accessed and the required information about terminal ID is acquired. That is, with reference to a terminal effectiveness information (step S4), a required response is obtained to the center database 6 (step S5). Here, the effective or invalid judgment to terminal ID is performed. On the other hand, a terminal unit 3 receives an acknowledgment in step S3, and transmits the required content of a transaction to the center computer 4 (step S6). If it judges that the center computer 4 has effective terminal ID at this time, it will progress to step S7 as it is, and

transaction processing will be performed.

[0032] On the other hand, when judgment that a terminal is invalid is carried out, a negative acknowledge is transmitted to a terminal unit 3, and processing is stopped (step S7*). In this processing, time when the result said that terminal ID is effective is obtained, after transmitting medium ID and terminal ID to the center computer 4 from a terminal unit 3 until transaction processing is started hardly changes with an example 1. That is, if the effectiveness of terminal ID will be judged by the time it transmits an acknowledgment to a terminal unit 3 and a terminal unit 3 sends the content of a transaction to the center computer 4, the time of effectiveness decision of terminal ID will not delay start of transaction processing.

[0033] In addition, even if the time of this terminal ID effectiveness decision becomes long somewhat, the time to transaction processing start is fully substantially shortened compared with the former. Furthermore, since an acknowledgment is transmitted to a terminal unit 3 in the type where processing which judges the effectiveness information on terminal ID was omitted, the processing time may be shortened on the contrary rather than an example 1.

[Translation done.]

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## TECHNICAL PROBLEM

[Object of the Invention] By the way, there were the following technical probrems which should be solved in the above Prior arts. In an IC card type cybermoney system, the computer in a terminal unit and a cybermoney management center is connected through networks, such as the telephone line, and internet or CATV. A terminal unit is arranged like ATM (automatic cash close payment equipment) in a financial institution, or is arranged at being arranged at the store which deals with goods \*\*\*\*, or \*\*\*\*\*\*\*\*. In case the change of the currency by the cybermoney management center is started, authentication processing of being a terminal unit with the connected effective terminal unit and authentication processing of being an IC card with an effective IC card are performed, and a transfer of a change demand information and a transfer of cybermoney are performed after that. When the time which this processing takes was long, not only making a user wait for a long time but there was a problem that traffic will also increase.

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## MEANS

[The means for solving a technical problem] this invention adopts the following configuration, in order to solve the above point.
The terminal unit which reads the information recorded by the <configuration 1> medium, and the center computer which receives the information which this terminal unit read and performs transaction processing, The transaction data which are equipped with the center database which stored the transaction data referred to in case this center computer performs transaction processing, and were stored in the above-mentioned center database The medium effectiveness information for judging the effectiveness of the above-mentioned medium and the terminal effectiveness information for judging the effectiveness of the above-mentioned terminal unit are included. to the above-mentioned center computer Before there is a transaction demand from a terminal unit, a center database is accessed beforehand. The effectiveness information store section which extracts and stores the medium effectiveness information and the terminal effectiveness information is prepared. the above-mentioned center computer The medium trading system characterized by receiving the identification data of a medium and a terminal unit from a terminal unit if there is a transaction demand from a terminal unit, and performing demanded transaction processing if it judges that both the concerned mediums and terminal units are effective with reference to the above-mentioned effectiveness information store section.

[0006] The terminal unit which reads the information recorded by the <configuration 2> medium, and the center computer which receives the information which this terminal unit read and performs transaction processing, The transaction data which are equipped with the center database which stored the transaction data referred to in case this center computer performs transaction processing, and were stored in the above-mentioned center database The medium effectiveness information for judging the effectiveness of the above-mentioned medium and the terminal effectiveness information for judging the effectiveness of the above-mentioned terminal unit are included. to the above-mentioned center computer Before there is a transaction demand from a terminal unit, a center database is accessed beforehand and the effectiveness information store section which extracts and stores the medium effectiveness information is prepared. the above-mentioned center computer When there was a transaction demand from a terminal unit, and the identification data of a medium and a terminal unit are received from a terminal unit, the effectiveness of the concerned medium is judged with reference to the above-mentioned effectiveness information store section and it judges that a medium is effective, while an acknowledgment is sent to a terminal unit The medium trading system characterized by performing demanded transaction processing if a center database is accessed and it judges that a terminal unit is effective with reference to the effectiveness information on the concerned terminal unit.
[0007] The terminal unit which reads the information recorded by the <configuration 3> medium, and the center computer which receives the information which this terminal unit read and performs transaction processing, The transaction data which are equipped with the center database which stored the transaction data referred to in case this center computer performs transaction processing, and were stored in the above-mentioned center database The medium effectiveness information for judging the effectiveness of the above-mentioned medium and the terminal effectiveness information for judging the effectiveness of the above-mentioned terminal unit are included. to the above-mentioned center computer Before there is a transaction demand from a terminal unit, a center database is accessed beforehand and the effectiveness information store section which extracts and stores the terminal effectiveness information is prepared. the above-mentioned center computer If there is a transaction demand from a terminal unit, the identification data of a medium and a terminal unit will be received from a terminal unit. When the effectiveness of the concerned terminal unit is judged with reference to the above-mentioned effectiveness information store section and it judges that a terminal unit is effective The medium trading system characterized by performing demanded transaction processing if a center database is accessed and it judges that a medium is effective with reference to the effectiveness information on a medium while an acknowledgment is sent to a terminal unit.
[0008]
[Gestalt of implementation of invention] Hereafter, the gestalt of enforcement of this invention is explained using an example.
<Example 1> In this invention, in case the change of the currency by the cybermoney management center is started, authentication processing of being a terminal unit with the connected effective terminal unit and authentication processing of being an IC card with an effective IC card are accelerated, and communication time is shortened. In addition, although this invention can be widely used for what uses a medium for various

margin transactions in addition to a transaction of the cybermoney by the IC card, the following examples are explained by the case of an IC card.

[0009] Drawing 1 shows the system-block view of an example 1. The terminal unit 3 equipped with IC card 1, the center computer 4 connected to this terminal unit 3 through the communication line 2, and the center database 6 connected with the center computer 4 through LAN (Local Area Network)5 etc. were shown in this drawing.

[0010] IC card 1 is constituted by the money card which carried the integrated circuit which has the function to memorize the transaction information on cybermoney or others and to memorize the identification data (ID) for discriminating the IC card 1, for example, contains memory and a processing unit. The terminal unit 3 is connected with the computer in a cybermoney management center through networks, such as the telephone line, and internet or CATV.

[0011] This terminal unit 3 is equipment used for a transaction which equips with IC card 1 and performs change of actual currency between a user's account and a cybermoney management account. A terminal unit 3 is equipped with read/write section 3A and communications department 3B. With the reading function of the information recorded by IC card 1, this terminal unit 3 transmits the read content through a network, has the function which writes the data received from the network in IC card 1, for example, is constituted by these by the personal computer and the communication terminal only for IC card 1 processings.

[0012] The effectiveness information store section 8, the effectiveness information judging section 9, and the transaction processing section 11 are formed in the center computer 4. The effectiveness information store section 8 is constituted by the storage which stores the information for judging the effectiveness of IC card 1 or the terminal unit 3 so that it may explain later. The effectiveness information judging section 9 is a fraction which has the function to judge the effectiveness of IC card 1 or the terminal unit 3, with reference to the effectiveness information store section 8, as explained later. The transaction processing section 11 is a fraction with the function to perform transaction processing which a terminal unit 3 demands, after the above-mentioned effectiveness information judging section 9 performs an effectiveness judging of IC card 1 or the terminal unit 3. In addition, the effectiveness information judging section 9 and the transaction processing section 11 are all constituted by the program module installed in the center computer 4.

[0013] The center database 6 is constituted by the storage which memorized all the transaction data 12 required because of a change transaction of currency etc. LAN5 etc. connects mutually and the center computer 4 and the center database 6 enable the access of various kinds of transaction data 12. In the transaction data 12 of this center database 6, the medium effectiveness information 13 and the terminal effectiveness information 14 for judging the effectiveness of IC card 1 or the terminal unit 3 are included. These informations are used for authentication processing by the center computer 4.

[0014] In authentication processing of being IC card 1 with effective IC card 1, the theft of the card is carried out, for example, or when it is the thing of expiration, judgment that a card is invalid is carried out. Such an information is recorded by all users' transaction data file for every card. This transaction data file is saved in the center database 6. The thing of the information for judging the effectiveness of IC card 1 in this transaction data file is called medium effectiveness information 13.

[0015] In authentication processing of being a terminal unit 3 with an effective terminal unit 3, when it is not the thing of the store registered beforehand or the registered user, judgment that a terminal unit 3 is invalid is carried out. Such an information is recorded by the registration terminal unit list etc. This registration terminal unit list is saved in the center database 6. A terminal unit 3 is registered for clarifying a user and preventing an unauthorized use. The thing of the information for judging the effectiveness of the terminal unit 3 under this registration terminal unit list is called terminal effectiveness information 14.

[0016] Next, an operation of the above-mentioned system is explained. The operation flow chart of the system of an example 1 is shown in drawing 2 . First, the above-mentioned terminal unit 3 is equipped with IC card 1 in step S1. Next, in step S2, the center computer 4 receives medium ID and terminal unit ID from a terminal unit 3. Next, in step S3, with reference to the effectiveness information store section 8, the center computer 4 takes out a medium effectiveness information and a terminal effectiveness information, and performs collating of medium ID and terminal unit ID.

[0017] In step S4, it judges whether a medium is effective and judges whether a terminal unit is effective in step S5. If it is judged that all are effective, it will progress to step S6. And an acknowledgment is transmitted to a terminal unit 3. And in step S7, the content of a transaction is received from a terminal unit 3. Then, a transaction is started in step S8.

[0018] On the other hand, if either a medium or a terminal unit is judged to be invalid in step S4 and step S5, it will progress to step S9 and a negative acknowledge will be transmitted to a terminal unit 3. And the connection between a terminal and a center computer is ended.

[0019] A user equips a terminal unit 3 with his IC card 1, for example, dials the telephone number, and connects a terminal unit 3 to the center computer 4. And the identification data (ID) of IC card 1 and the identification data (ID) of a terminal unit 3 are first sent from a terminal unit 3 to the center computer 4.

[0020] Conventionally, at this time, the center computer 4 accessed the center database 6, and the effectiveness of IC card 1 and the effectiveness of a terminal unit 3 were judged with reference to the medium effectiveness information 13 and the terminal effectiveness information 14. On the other hand, in this invention, at the time of system activation, the center computer 4 accesses the center database 6 beforehand, extracts the medium effectiveness information 13 and the terminal effectiveness information 14, and stores and

prepares the effectiveness information store section 8 prepared in the center computer 4 side.

[0021] Therefore, if the identification data of IC card 1 and the identification data of a terminal unit 3 are transmitted from a terminal unit 3 to the center computer 4, the effectiveness information judging section 9 of the center computer 4 will judge the effectiveness of IC card 1, and the effectiveness of a terminal unit 3 with reference to the effectiveness information store section 8. Since the center database 6 is not accessed at this time, judgment processing of effectiveness can be performed quickly.

[0022] If it judges that both IC card 1 and the terminal unit 3 are effective as a result of this judgment, an acknowledgment will be transmitted from the center computer 4 to a terminal unit 3. Moreover, if judged with IC card 1, any of a terminal unit 3, or one side being invalid, a negative acknowledge will be transmitted from the center computer 4 to a terminal unit 3. The terminal unit 3 which received the acknowledgment transmits a predetermined transaction demand to the center computer 4 continuously. The transaction processing section 11 of the center computer 4 starts processing of the change of currency etc. according to a demand of a terminal unit 3.

[0023] In addition, it is for shortening time judging the effectiveness of IC card 1 and the terminal unit 3 in the center computer 4 that the center computer 4 stores beforehand the medium effectiveness information 13 and the terminal effectiveness information 14 in the effectiveness information store section 8, after equipping a terminal unit 3 with IC card 1. Therefore, if the timing which stores the medium effectiveness information 13 and the terminal effectiveness information 14 in the effectiveness information store section 8, or is updated is before there is a transaction demand from a terminal unit 3, it is always good. For example, in order to start business every day, the time of starting a system is sufficient, and it may be made to update the content every fixed time after system activation. You may be made to update by the demand from the center database 6 side at any time.
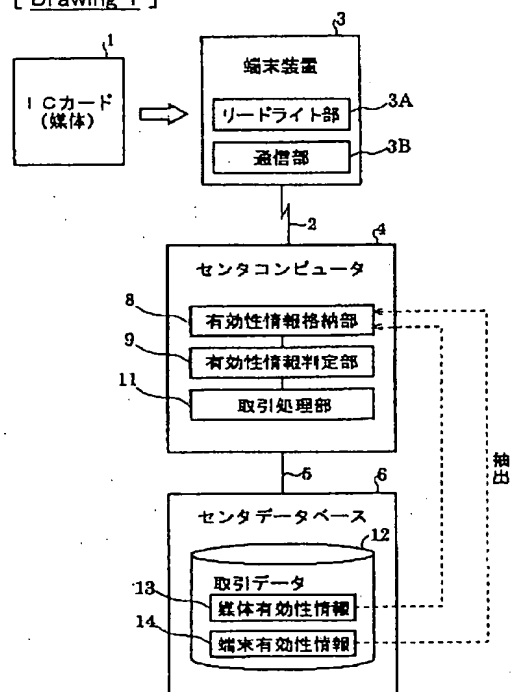
[Translation done.]

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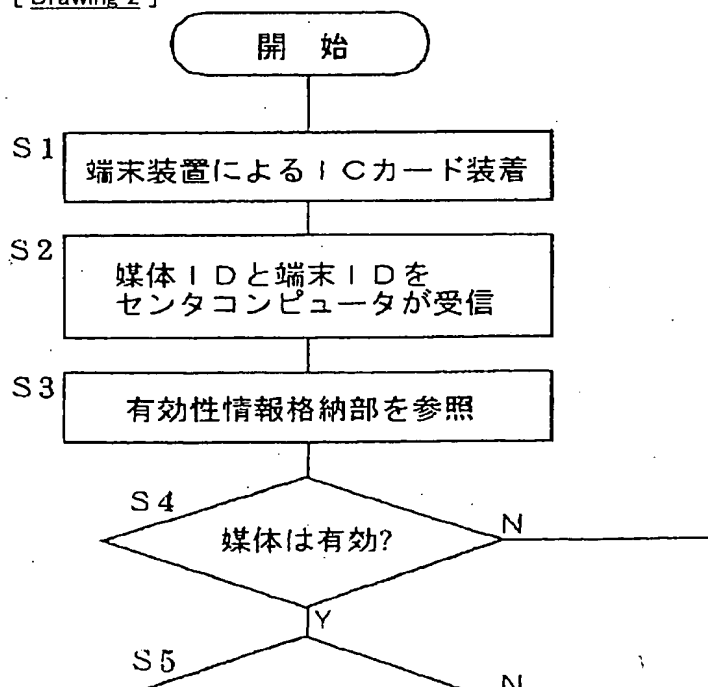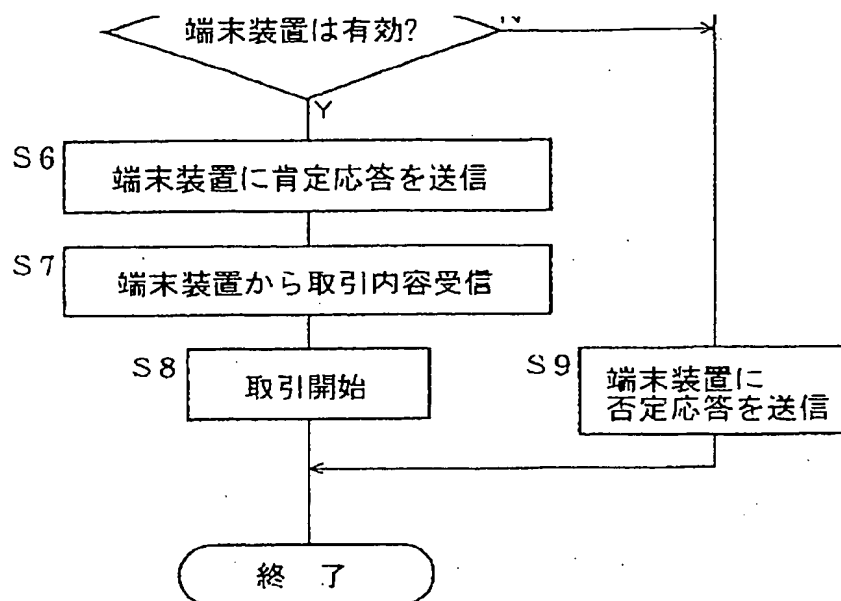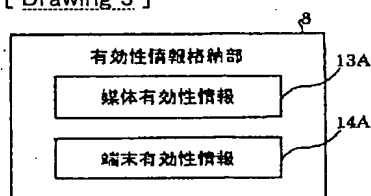3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[An easy explanation of a drawing]
[ Drawing 1 ] It is the block diagram showing the system of an example 1.
[ Drawing 2 ] It is the operation flow chart of the system of an example 1.
[ Drawing 3 ] It is comparison explanatory drawing of the effectiveness information store section of each
example.
[ Drawing 4 ] It is the sequence chart of an example 2 of operation.
[ Drawing 5 ] It is the sequence chart of an example 3 of operation.
[An explanation of a sign]
1 IC Card
3 Terminal Unit
4 Center Computer
5 LAN
6 Center Database
8 Effectiveness Information Store Section
9 Effectiveness Information Judging Section
11 Transaction Processing Section
12 Transaction Data
13 Medium Effectiveness Information
14 Terminal Effectiveness Information

[Translation done.]

DRAWINGS

[ Drawing 1 ]



具体例１のシステムブロック図

[ Drawing 2 ]

端末装置は有効?

Y

S6 端末装置に肯定応答を送信

S7 端末装置から取引内容受信

S8 取引開始

S9 端末装置に否定応答を送信

終了

具体例1のシステムの動作フローチャート

[ Drawing 3 ]

有効性情報格納部　　13A
媒体有効性情報
端末有効性情報　　14A

具体例1
（a）

有効性情報格納部　　13A
媒体有効性情報

具体例2
（b）
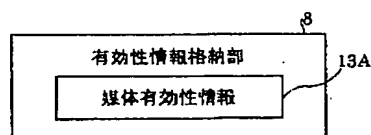
有効性情報格納部　　14A
端末有効性情報
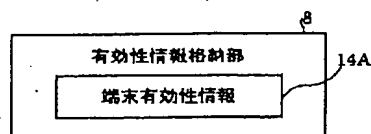
具体例3
（c）

各具体例の有効性情報格納部

[ Drawing 4 ]

端末装置　　3

センタ
コンピュータ　　4

センタ
データベース　　6

媒体ID　S1
端末ID

S2
有効性情報
格納部参照

（否定応答）
肯定応答　S3

S4
端末有効性情報

参照
応答　　S5

S6　取引内容

（否定応答） S7＊
　　　　　　　S7
取引処理
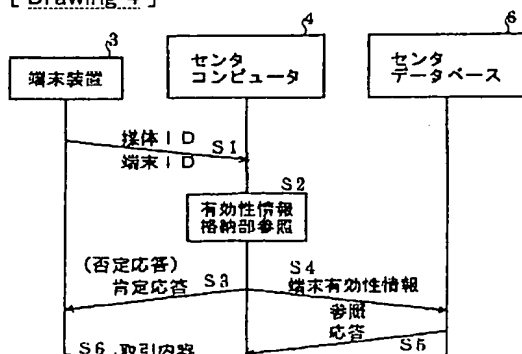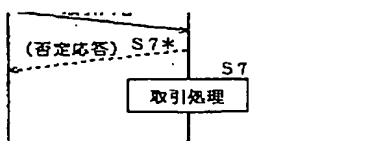
具体例2の動作シーケンスチャート

[ Drawing 5 ]

| 端末装置 3 | センタ コンピュータ 4 | センタ データベース 6 |

媒体ID　S1
端末ID
　　　　　　S2
有効性情報
格納部参照

（否定応答）
肯定応答　S3　　S4 媒体有効性情報
　　　　　　　　　　参照

S6　取引内容　　　応答　S5
（否定応答）S7＊
　　　　　　　S7
取引処理
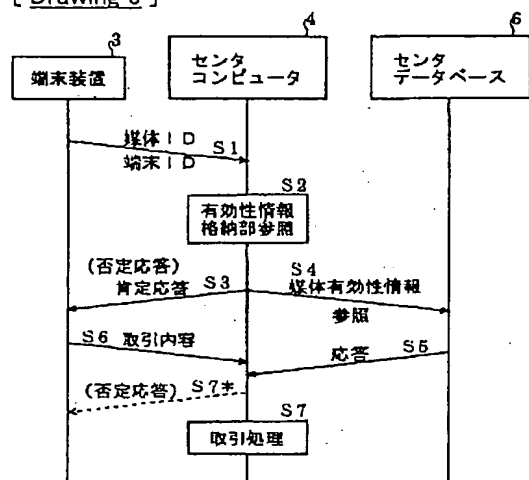
具体例3の動作シーケンスチャート

[Translation done.]
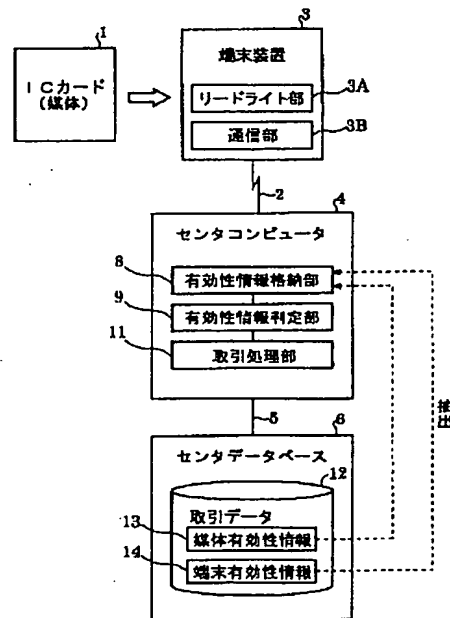
(54)【発明の名称】 媒体取引システム

(57)【要約】
【解決手段】 端末装置3にICカード1を装着する
と、ICカード1のIDと端末装置3のIDがセンタコ
ンピュータ4に送られる。センタコンピュータ4は、予
めセンタデータベース6から抽出した有効性情報を有効
性情報格納部8に格納している。ICカードと端末装置
の有効性は、センタコンピュータ4により判断され、共
に有効であれば取引が開始される。
【効果】 予め媒体有効性情報13や端末有効性情報1
4がセンタコンピュータ4側に抽出されているので、有
効性判断が速やかにでき、取引時間が短縮される。

具体例1のシステムブロック図

1

2

【特許請求の範囲】

【請求項１】　媒体に記録された情報を読み取る端末装置と、

この端末装置の読み取った情報を受信して取引処理を実行するセンタコンピュータと、

このセンタコンピュータが取引処理を実行する際に参照する取引データを格納したセンタデータベースとを備え、

前記センタデータベースに格納された取引データは、前記媒体の有効性を判断するための媒体有効性情報と、前記端末装置の有効性を判断するための端末有効性情報とを含み、

前記センタコンピュータには、端末装置から取引要求がある以前に、予めセンタデータベースをアクセスして、媒体有効性情報と端末有効性情報とを抽出して格納しておく、有効性情報格納部を設け、

前記センタコンピュータは、

端末装置から取引要求があると、端末装置から媒体と端末装置の識別データを受け入れて、前記有効性情報格納部を参照して、当該媒体と端末装置とがともに有効と判定されると、要求された取引処理を実行することを特徴とする媒体取引システム。

【請求項２】　媒体に記録された情報を読み取る端末装置と、

この端末装置の読み取った情報を受信して取引処理を実行するセンタコンピュータと、

このセンタコンピュータが取引処理を実行する際に参照する取引データを格納したセンタデータベースとを備え、

前記センタデータベースに格納された取引データは、前記媒体の有効性を判断するための媒体有効性情報と、前記端末装置の有効性を判断するための端末有効性情報とを含み、

前記センタコンピュータには、端末装置から取引要求がある以前に、予めセンタデータベースをアクセスして、媒体有効性情報を抽出して格納しておく、有効性情報格納部を設け、

前記センタコンピュータは、

端末装置から取引要求があると、端末装置から媒体と端末装置の識別データを受け入れて、前記有効性情報格納部を参照して当該媒体の有効性を判定し、媒体が有効と判定された場合には、肯定応答を端末装置に送ると共に、センタデータベースをアクセスして当該端末装置の有効性情報を参照し、端末装置が有効と判定されると、要求された取引処理を実行することを特徴とする媒体取引システム。

【請求項３】　媒体に記録された情報を読み取る端末装置と、

この端末装置の読み取った情報を受信して取引処理を実行するセンタコンピュータと、

このセンタコンピュータが取引処理を実行する際に参照する取引データを格納したセンタデータベースとを備え、

前記センタデータベースに格納された取引データは、前記媒体の有効性を判断するための媒体有効性情報と、前記端末装置の有効性を判断するための端末有効性情報とを含み、

前記センタコンピュータには、端末装置から取引要求がある以前に、予めセンタデータベースをアクセスして、端末有効性情報を抽出して格納しておく、有効性情報格納部を設け、

前記センタコンピュータは、

端末装置から取引要求があると、端末装置から媒体と端末装置の識別データを受け入れて、前記有効情報格納部を参照して当該端末装置の有効性を判定し、端末装置が有効と判定された場合には、肯定応答を端末装置に送ると共に、センタデータベースをアクセスして媒体の有効性情報を参照し、媒体が有効と判定されると、要求された取引処理を実行することを特徴とする媒体取引システム。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、電子マネーを内蔵する利用者のＩＣカードを、金融機関のコンピュータに接続された端末装置に装着して、実際の通貨と電子マネーの交換を行うような入出金処理に適する、媒体取引システムに関する。

【０００２】

【従来の技術】電子マネーをＩＣカードに内蔵させて、店舗での買い物やインターネット取引に使用する、ＩＣカード型電子マネーシステムが開発されている。このシステムでは、利用者は、買い物や取引に先立って、端末装置を使用して金融機関の電子マネー管理センタにあるコンピュータにアクセスする。電子マネー管理センタでは、利用者の口座から実際の通貨を電子マネーにしてＩＣカードに移したり、ＩＣカードから電子マネーを利用者の口座に戻したりする。即ち、電子マネー管理センタは、金融機関にある利用者の口座と電子マネー管理口座との間で実際の通貨の振り替えを行う。ＩＣカードは財布の役割をし、電子マネーが買い物等に使用される。

【０００３】このようなＩＣカード型電子マネーシステムは、特に小口決裁の分野での利用が期待されており、例えば「ＥＣの技術動向：要素技術全般（pp. 772-777）情報処理学会誌Vol. 38, No. 9」に内容が紹介されている。

【０００４】

【発明が解決しようとする課題】ところで、上記のような従来の技術には、次のような解決すべき課題があった。ＩＣカード型電子マネーシステムでは、端末装置と電子マネー管理センタにあるコンピュータとは、電話回

線やインターネット、あるいはケーブルテレビ等のネットワークを介して接続される。端末装置は、ＡＴＭ（自動現金入出金装置）のように金融機関に配置されたり、商品を取り扱う店舗に配置されたり、あるいは、利用者宅に配置される。電子マネー管理センタによる通貨の振り替えを開始する際には、接続された端末装置が有効な端末装置かどうかの認証処理と、ＩＣカードが有効なＩＣカードかどうかの認証処理とを実行し、その後振り替え要求情報の転送と電子マネーの転送を行う。この処理に要する時間が長いと、利用者を長時間待たせるだけでなく、通信費もかさんでしまうという問題があった。

【０００５】
【課題を解決するための手段】本発明は以上の点を解決するため次の構成を採用する。

〈構成１〉媒体に記録された情報を読み取る端末装置と、この端末装置の読み取った情報を受信して取引処理を実行するセンタコンピュータと、このセンタコンピュータが取引処理を実行する際に参照する取引データを格納したセンタデータベースとを備え、上記センタデータベースに格納された取引データは、上記媒体の有効性を判断するための媒体有効性情報と、上記端末装置の有効性を判断するための端末有効性情報とを含み、上記センタコンピュータには、端末装置から取引要求がある以前に、予めセンタデータベースをアクセスして、媒体有効性情報と端末有効性情報とを抽出して格納しておく、有効性情報格納部を設け、上記センタコンピュータは、端末装置から取引要求があると、端末装置から媒体と端末装置の識別データを受け入れて、上記有効性情報格納部を参照して、当該媒体と端末装置とがともに有効と判定されると、要求された取引処理を実行することを特徴とする媒体取引システム。

【０００６】〈構成２〉媒体に記録された情報を読み取る端末装置と、この端末装置の読み取った情報を受信して取引処理を実行するセンタコンピュータと、このセンタコンピュータが取引処理を実行する際に参照する取引データを格納したセンタデータベースとを備え、上記センタデータベースに格納された取引データは、上記媒体の有効性を判断するための媒体有効性情報と、上記端末装置の有効性を判断するための端末有効性情報とを含み、上記センタコンピュータには、端末装置から取引要求がある以前に、予めセンタデータベースをアクセスして、媒体有効性情報を抽出して格納しておく、有効性情報格納部を設け、上記センタコンピュータは、端末装置から取引要求があると、端末装置から媒体と端末装置の識別データを受け入れて、上記有効性情報格納部を参照して当該媒体の有効性を判定し、媒体が有効と判定された場合には、肯定応答を端末装置に送ると共に、センタデータベースをアクセスして当該端末装置の有効性情報を参照し、端末装置が有効と判定されると、要求された取引処理を実行することを特徴とする媒体取引システ

ム。

【０００７】〈構成３〉媒体に記録された情報を読み取る端末装置と、この端末装置の読み取った情報を受信して取引処理を実行するセンタコンピュータと、このセンタコンピュータが取引処理を実行する際に参照する取引データを格納したセンタデータベースとを備え、上記センタデータベースに格納された取引データは、上記媒体の有効性を判断するための媒体有効性情報と、上記端末装置の有効性を判断するための端末有効性情報とを含み、上記センタコンピュータには、端末装置から取引要求がある以前に、予めセンタデータベースをアクセスして、端末有効性情報を抽出して格納しておく、有効性情報格納部を設け、上記センタコンピュータは、端末装置から取引要求があると、端末装置から媒体と端末装置の識別データを受け入れて、上記有効性情報格納部を参照して当該端末装置の有効性を判定し、端末装置が有効と判定された場合には、肯定応答を端末装置に送ると共に、センタデータベースをアクセスして媒体の有効性情報を参照し、媒体が有効と判定されると、要求された取引処理を実行することを特徴とする媒体取引システム。

【０００８】
【発明の実施の形態】以下、本発明の実施の形態を具体例を用いて説明する。

〈具体例１〉この発明では、電子マネー管理センタによる通貨の振り替えを開始する際に、接続された端末装置が有効な端末装置かどうかの認証処理と、ＩＣカードが有効なＩＣカードかどうかの認証処理とを高速化して、通信時間を短縮する。なお、この発明は、ＩＣカードによる電子マネーの取引以外に、様々な信用取引のために媒体を使用するものに広く利用できるが、以下の具体例はＩＣカードの場合で説明する。

【０００９】図１は、具体例１のシステムブロック図を示す。この図には、ＩＣカード１を装着する端末装置３と、この端末装置３に通信回線２を介して接続されたセンタコンピュータ４と、ＬＡＮ（ローカルエリアネットワーク）５等を介してセンタコンピュータ４と接続されたセンタデータベース６を示した。

【００１０】ＩＣカード１は、電子マネーやその他の取引情報を記憶し、そのＩＣカード１を識別するための識別データ（ＩＤ）を記憶する機能を持ち、例えばメモリや、演算処理装置を含む集積回路を搭載したキャッシュカード等により構成される。端末装置３は、電子マネー管理センタにあるコンピュータと、電話回線やインターネット、あるいはケーブルテレビ等のネットワークを介して接続されている。

【００１１】この端末装置３は、ＩＣカード１を装着して、利用者の口座と電子マネー管理口座との間で実際の通貨の振り替えを行うような取引に利用される装置である。端末装置３は、リードライト部３Ａと通信部３Ｂとを備える。これらによって、この端末装置３は、ＩＣカ

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ード１に記録された情報の読み取り機能と、読み取った
内容をネットワークを通じて送信したり、ネットワーク
から受信されたデータをＩＣカード１に書き込む機能を
持ち、例えばパーソナルコンピュータや、ＩＣカード１
処理専用の通信端末により構成される。

【００１２】センタコンピュータ４には、有効性情報格
納部８と、有効性情報判定部９と、取引処理部１１とが
設けられている。有効性情報格納部８は、後で説明する
ように、ＩＣカード１や端末装置３の有効性を判断する
ための情報を格納しておく記憶装置により構成される。
有効性情報判定部９は、後で説明するように、有効性情
報格納部８を参照して、ＩＣカード１や端末装置３の有
効性を判定する機能を持つ部分である。取引処理部１１
は、上記有効性情報判定部９がＩＣカード１や端末装置
３の有効性判定を行った後、端末装置３の要求する取引
処理を実行する機能を持つ部分である。なお、有効性情
報判定部９と、取引処理部１１とはいずれも、センタ
コンピュータ４にインストールされたプログラムモジュー
ルにより構成される。

【００１３】センタデータベース６は、通貨の振り替え
取引等のために必要な全ての取引データ１２を記憶した
記憶装置により構成される。センタコンピュータ４とセ
ンタデータベース６とはＬＡＮ５等により相互に接続さ
れて、各種の取引データ１２のアクセスを可能にしてい
る。このセンタデータベース６の取引データ１２中に
は、ＩＣカード１や端末装置３の有効性を判断するため
の媒体有効性情報１３と端末有効性情報１４が含まれ
る。これらの情報は、センタコンピュータ４による認証
処理に利用される。

【００１４】ＩＣカード１が有効なＩＣカード１かどう
かの認証処理では、例えばカードが盗難されたものだっ
たり、期限切れのものだった場合に、カードが無効とい
う判定がされる。こうした情報は、全ての利用者の、カ
ードごとの取引データファイルに記録される。この取引
データファイルが、センタデータベース６中に保存され
ている。この取引データファイル中のＩＣカード１の有
効性を判断するための情報のことを、媒体有効性情報１
３と呼ぶ。

【００１５】端末装置３が有効な端末装置３かどうかの
認証処理では、予め登録された店舗や登録された利用者
のものでない場合に、端末装置３が無効という判定がさ
れる。こうした情報は、登録端末装置リスト等に記録さ
れる。この登録端末装置リストが、センタデータベース
６中に保存されている。端末装置３を登録しておくの
は、利用者を明確にして不正使用を防止するためであ
る。この登録端末装置リスト中の端末装置３の有効性を
判断するための情報のことを、端末有効性情報１４と呼
ぶ。

【００１６】次に、上記のシステムの動作を説明する。
図２に、具体例１のシステムの動作フローチャートを示

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す。まず、ステップＳ１において、上記端末装置３にＩ
Ｃカード１を装着する。次に、ステップＳ２において、
センタコンピュータ４は、媒体ＩＤと端末装置ＩＤとを
端末装置３から受信する。次に、ステップＳ３におい
て、センタコンピュータ４は、有効性情報格納部８を参
照して、媒体有効性情報と端末有効性情報を取り出し、
媒体ＩＤと端末装置ＩＤの照合を行う。

【００１７】ステップＳ４において、媒体が有効かどう
かを判断し、ステップＳ５において、端末装置が有効か
どうかを判断する。いずれも有効と判断されると、ステ
ップＳ６に進む。そして、端末装置３に対し肯定応答を
送信する。そして、ステップＳ７において、端末装置３
から取引内容を受信する。その後、ステップＳ８におい
て、取引を開始する。

【００１８】一方、ステップＳ４とステップＳ５におい
て、媒体あるいは端末装置のいずれかが無効と判断され
ると、ステップＳ９に進み、端末装置３に対し否定応答
を送信する。そして、端末とセンタコンピュータとの接
続を終了する。

【００１９】利用者は、自分のＩＣカード１を端末装置
３に装着して、例えば電話番号をダイヤルし、端末装置
３をセンタコンピュータ４に接続する。そして、始め
に、端末装置３からセンタコンピュータ４に対して、Ｉ
Ｃカード１の識別データ（ＩＤ）と端末装置３の識別デ
ータ（ＩＤ）とを送る。

【００２０】従来は、このとき、センタコンピュータ４
がセンタデータベース６にアクセスし、媒体有効性情報
１３と端末有効性情報１４とを参照して、ＩＣカード１
の有効性と端末装置３の有効性とを判定していた。これ
に対して、本発明では、センタコンピュータ４が、シス
テム起動時に、予めセンタデータベース６をアクセスし
て、媒体有効性情報１３と端末有効性情報１４とを抽出
し、センタコンピュータ４側に設けられた有効性情報格
納部８に格納して、準備しておく。

【００２１】従って、端末装置３からセンタコンピュー
タ４に対して、ＩＣカード１の識別データと端末装置３
の識別データとが送信されると、センタコンピュータ４
の有効性情報判定部９は、有効性情報格納部８を参照し
て、ＩＣカード１の有効性と端末装置３の有効性とを判
定する。このとき、センタデータベース６をアクセスす
ることがないので、速やかに有効性の判定処理ができ
る。

【００２２】この判定の結果、ＩＣカード１と端末装置
３とがともに有効と判定されると、センタコンピュータ
４から端末装置３に対して、肯定応答を送信する。ま
た、ＩＣカード１か端末装置３のいずれか一方が無効と
判定されると、センタコンピュータ４から端末装置３に
対して否定応答が送信される。肯定応答を受信した端末
装置３は、続いて所定の取引要求をセンタコンピュータ
４に送信する。センタコンピュータ４の取引処理部１１

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は、端末装置３の要求に応じて、通貨の振り替え等の処理を開始する。

【００２３】なお、センタコンピュータ４が、有効性情報格納部８に、媒体有効性情報１３と端末有効性情報１４とを前もって格納しておくのは、ＩＣカード１を端末装置３に装着してから、センタコンピュータ４においてＩＣカード１と端末装置３の有効性を判定する時間を短縮するためである。従って、有効性情報格納部８に、媒体有効性情報１３と端末有効性情報１４とを格納したり更新したりするタイミングは、端末装置３から取引要求がある以前であればいつでもよい。例えば、毎日業務を開始するためにシステムを立ち上げるときでもよいし、システム起動後、一定時間おきに内容を更新するようにしてもよい。センタデータベース６側からの要求により随時更新するようにしてもよい。

【００２４】〈具体例１の効果〉以上のように、端末装置３から取引要求があったとき、センタコンピュータが予めセンタデータベースから抽出してある媒体有効性情報と端末有効性情報を利用して媒体や端末の有効性を判定するので、センタコンピュータがセンタデータベースにアクセスしながら有効性を判断する場合に比べ、処理時間が十分に短縮される。これによって、取引等の処理を高速化できる。

【００２５】〈具体例２〉具体例１では、取引処理の高速化のために、媒体有効性情報１３と端末有効性情報１４とを、端末装置３から取引要求がある以前にセンタコンピュータ４側に抽出して記憶させるようにした。ＩＣカード１の有効性情報は、例えば無効となったＩＣカード１の識別データをリストアップしたデータ群により構成される。また、端末装置３の有効性情報は、有効な端末の識別データをリストアップしたデータ群により構成される。従って、管理対象となるＩＣカード１や端末装置３の数が増加すると、次第に媒体有効性情報１３や端末有効性情報１４のデータ量が増える。

【００２６】このため、媒体有効性情報１３と端末有効性情報１４全てをセンタデータベース６から抽出してセンタコンピュータ４に保存しておこうとすると、データ記憶のための資源量が膨大になるおそれもある。そこで、この具体例では、媒体有効性情報１３と端末有効性情報１４のいずれか一方のみをセンタコンピュータ４側に抽出して記憶させるようにし、処理の高速化という利点を維持しながら、データ記憶のための資源量を抑えるようにした。具体例２は、媒体有効性情報１３をセンタコンピュータ４の有効性情報格納部８に記憶しておく。以下その具体例について説明する。

【００２７】図３には、各具体例の有効性情報格納部を比較した説明図を示す。図３（ａ）は具体例１の場合で、有効性情報格納部８に媒体有効性情報１３Ａと端末有効性情報１４Ａとが格納されている。一方、（ｂ）は具体例２の例で、有効性情報格納部８には媒体有効性情報

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報１３Ａのみが格納されている。また、（ｃ）は後から説明する具体例３の例で、有効性情報格納部８に端末有効性情報１４Ａが格納されている。データ量としては、媒体有効性情報１３Ａの方が端末有効性情報１４Ａよりも多いと言える。

【００２８】一方、端末はほとんどの場合有効と判断されるのに対し、媒体は比較的無効と判断されるケースが多い。これらの点から、媒体有効性情報１３Ａと端末有効性情報１４Ａのいずれか一方を有効性情報格納部８に格納しておくと、記憶容量の問題と処理の高速性の問題で、それぞれの利点が生じる。

【００２９】図４には、具体例２の動作シーケンスチャートを示す。なお、具体例２のシステム自身は、図１に示したものとその構成は同一である。具体例１と相違するのは、有効性情報格納部８に予め媒体有効性情報１３のみを抽出し格納しておく点である。また、取引開始後のおおよその処理も、具体例１と具体例２は変わるところはない。図４のシーケンスチャートには、具体例１と異なる処理を、特にその処理の時間経過がわかるように図示した。

【００３０】まず、ステップＳ１において、端末装置３から媒体ＩＤと端末ＩＤとがセンタコンピュータ４に送信されると、センタコンピュータ４では有効性情報格納部を参照し、媒体ＩＤの有効性を判断する（ステップＳ２）。そして、媒体が有効であれば肯定応答を、無効であれば否定応答を端末装置３に送信する（ステップＳ３）。

【００３１】なお、この肯定応答を端末装置３に送出すると同時に、センタデータベース６にアクセスし、端末ＩＤについての必要な情報を得る。即ち、センタデータベース６に対し端末有効性情報の参照を行い（ステップＳ４）、必要な応答を得る（ステップＳ５）。ここで、端末ＩＤに対する有効あるいは無効の判定が行われる。一方、端末装置３は、肯定応答をステップＳ３において受信し、必要な取引内容をセンタコンピュータ４に送信する（ステップＳ６）。このとき、センタコンピュータ４は、端末ＩＤが有効であると判断すると、そのままステップＳ７に進み、取引処理を実行する。

【００３２】一方、端末が無効であるという判定をしたときは、端末装置３に対し否定応答を送信し、処理を中止する（ステップＳ７＊）。この処理において、例えば端末ＩＤが有効であるという結果が得られたときは、端末装置３から媒体ＩＤや端末ＩＤをセンタコンピュータ４に送信してから、取引処理が開始されるまでの時間は、具体例１とほとんど変わらない。即ち、肯定応答を端末装置３に送信し、端末装置３が取引内容をセンタコンピュータ４に送るまでの間に端末ＩＤの有効性を判定してしまえば、端末ＩＤの有効性判断の時間は、取引処理の開始を遅らせることはない。

【００３３】なお、この端末ＩＤ有効性判断の時間が多

少長くなっても実質的に取引処理開始までの時間は従来
に比べ十分に短縮される。更に、端末ＩＤの有効性情報
を判定する処理が省略された形で端末装置３に肯定応答
が送信されるため、具体例１よりもかえって処理時間が
短縮される可能性もある。

【００３４】〈具体例２の効果〉媒体有効性情報１３を
センタコンピュータ４の有効性情報格納部８に予め記憶
しておくことにより、処理の高速化という利点を維持し
ながら、データ記憶のための資源量を抑えることができ
る。また、端末装置３が無効であるケースはきわめてま
れなので、実質的に具体例１と同様の高速処理が可能に
なる。

【００３５】〈具体例３〉具体例３は、媒体有効性情報
１３をセンタコンピュータ４の有効性情報格納部８に記
憶しておく。以下その具体例について説明する。

【００３６】図５には、具体例３の動作シーケンスチャ
ートを示す。このシーケンスチャートの構成は、図４に
示したものとほぼ同様である。端末装置３から始めのス
テップＳ１において、媒体ＩＤと端末ＩＤとを受信する
と、センタコンピュータ４は、有効性情報格納部を参照
し、まず端末ＩＤの有効性を判断する（ステップＳ
２）。そして、媒体ＩＤの有効性判断を省略して、端末
装置３に対し肯定応答あるいは否定応答を送信する（ス
テップＳ３）。

【００３７】そして、同時に、センタコンピュータ４
は、センタデータベース６の媒体有効性情報を参照する
（ステップＳ４）。なお、ここでは、媒体有効性情報の
データ量が比較的多いと仮定し、媒体有効性情報に対す
る応答をステップＳ５で得るまでの時間が、端末装置３
から取引内容を受信するステップＳ６までの時間より長
くしてある。例えば、このようなケースであっても、セ
ンタコンピュータ４はセンタデータベース６からの応答
を待って、取引処理を開始する（ステップＳ７）。この
具体例３も具体例２とほぼ同様の効果が得られる。

【００３８】なお、端末ＩＤの有効性チェックは、媒体
ＩＤの有効性チェックよりも短時間で行えることから、
ステップＳ３において、端末装置３に対し肯定応答ある
いは否定応答を送信するタイミングは、具体例２よりも
速くなる可能性が高い。無効なＩＣカードは比較的多く
発生するため、無効なＩＣカードの場合には、端末装置

３に対する否定応答が遅くなることもある。しかしなが
ら、有効なＩＣカードに対する処理が高速化されれば、
正当な顧客に対するサービスは低下しないから問題な
い。

【００３９】また、さらに、無効なＩＣカードと判断を
した場合には、端末装置に取り込んだまま返却をせずに
速やかに回収してしまうような方法を採用することもで
きる。これによって、その無効なＩＣカードが再び端末
に装着されるケースを減少させ、媒体無効情報もその都
度更新するようにすれば、この具体例の実用性が高ま
る。

【００４０】〈具体例３の効果〉端末有効性情報１４を
センタコンピュータ４の有効性情報格納部８に予め記憶
しておくことにより、処理の高速化という利点を維持し
ながら、データ記憶のための資源量を抑えることができ
る。また、端末装置数よりも媒体数の方が圧倒的に多
い。従って、端末有効性情報１４は、媒体有効性情報１
３に比べてデータ量が少なく、センタコンピュータ４の
記憶容量を経済的に設定できる。

【図面の簡単な説明】

【図１】具体例１のシステムを示すブロック図である。
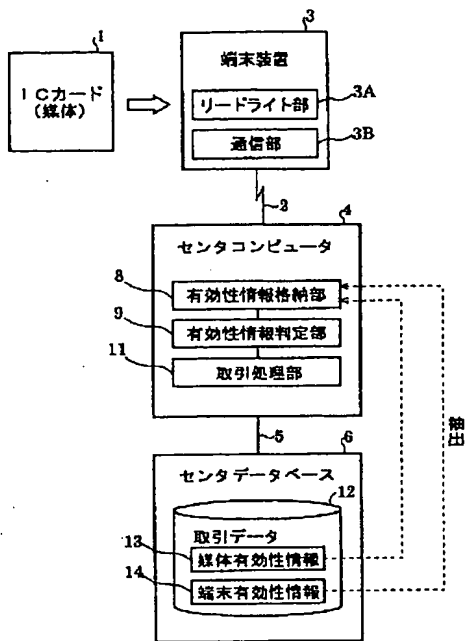
【図２】具体例１のシステムの動作フローチャートであ
る。

【図３】各具体例の有効性情報格納部の比較説明図であ
る。
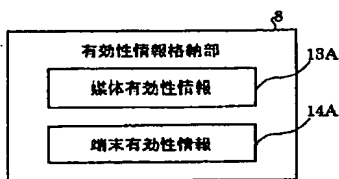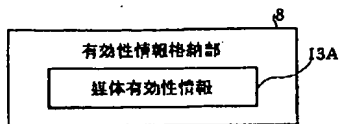
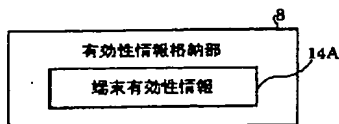【図４】具体例２の動作シーケンスチャートである。

【図５】具体例３の動作シーケンスチャートである。

【符号の説明】

１　　ＩＣカード
３　　端末装置
４　　センタコンピュータ
５　　ＬＡＮ
６　　センタデータベース
８　　有効性情報格納部
９　　有効性情報判定部
１１　取引処理部
１２　取引データ
１３　媒体有効性情報
１４　端末有効性情報

【図１】

I Cカード
（媒体） → 端末装置 3
　　リードライト部 3A
　　通信部 3B

センタコンピュータ 4
8 有効性情報格納部
9 有効性情報判定部
11 取引処理部

センタデータベース 6
12 取引データ
13 媒体有効性情報
14 端末有効性情報

具体例１のシステムブロック図

【図３】

有効性情報格納部 8
13A 媒体有効性情報
14A 端末有効性情報

具体例１
（ａ）

有効性情報格納部 8
13A 媒体有効性情報

具体例２
（ｂ）

有効性情報格納部 8
14A 端末有効性情報

具体例３
（ｃ）

各具体例の有効性情報格納部

【図２】

開　始

S1 端末装置によるＩＣカード装着

S2 媒体ＩＤと端末ＩＤを
センタコンピュータが受信

S3 有効性情報格納部を参照

S4 媒体は有効？ —N→

Y

S5 端末装置は有効？ —N→

Y

S6 端末装置に肯定応答を送信
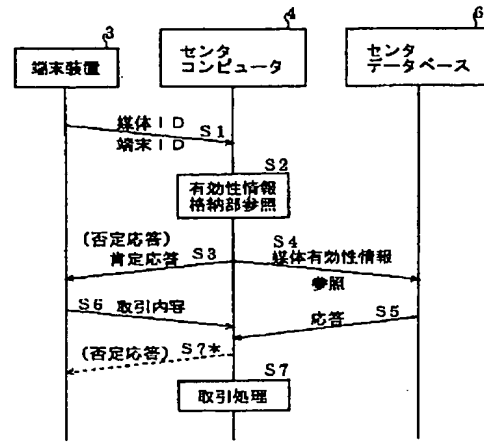
S7 端末装置から取引内容受信

S8 取引開始

S9 端末装置に
否定応答を送信

終　了
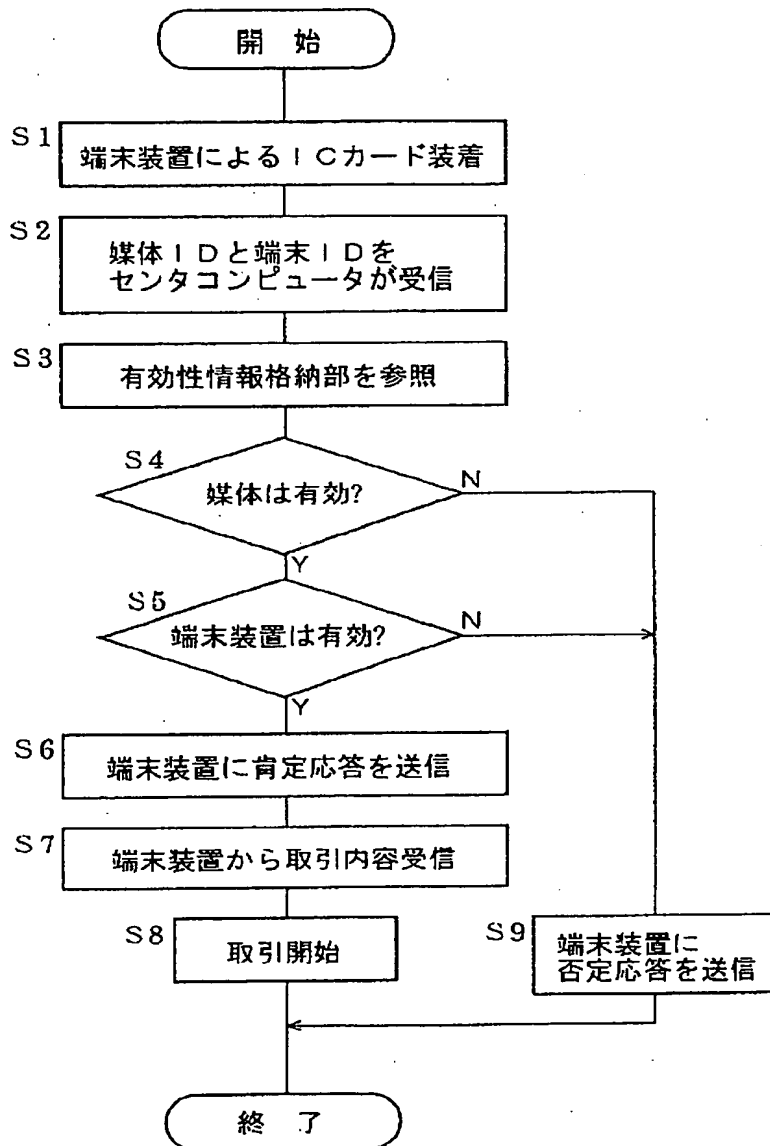
具体例１のシステムの動作フローチャート

【図４】
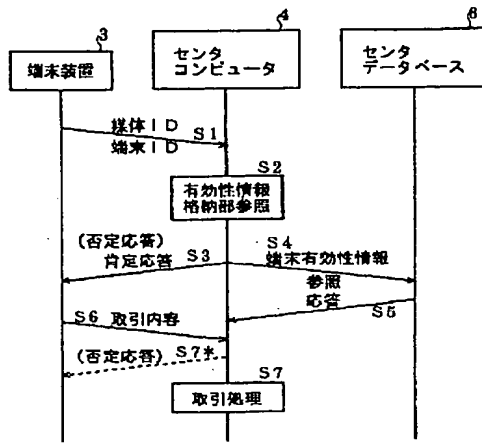


具体例２の動作シーケンスチャート

【図５】



具体例３の動作シーケンスチャート